Report on Cotton Trash Measurements

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Inter-Instrument Results from CSITC RT

Optional Parameters

Inter-Instrument Averages, Inter-Instrument Variations, Typical within-instrument Variations

Trash Count

			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			25.18	12.93	21.72	31.09	
Reference Values for Evaluation			25.18	12.93	21.72	31.09	
Number Of Instruments			~~102~~	~~102~~	~~102~~	~~102~~	**102**
Inter-Instrument Variation	based on 30 tests	SD	6.79	5.76	7.84	11.38	**7.94**
		CV %	27.0	44.5	36.1	36.6	**36.1**
	based on 6 tests	SD	~~6.42~~	~~6.07~~	~~8.14~~	~~11.80~~	**8.60**
		CV %	33.4	46.9	37.5	37.9	**38.9**
	based on single tests	SD	8.90	6.41	8.49	12.20	**9.00**
		CV %	35.4	49.6	39.1	39.2	**40.8**
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	2.17	1.54	2.00	2.49	**2.05**
		CV %	8.6	11.9	9.2	8.0	**9.4**
	between single tests on one day	SD	2.73	1.83	2.47	2.83	**2.47**
		CV %	10.8	14.2	11.4	9.1	**11.4**
	between all tests on different days	SD	3.92	2.78	3.33	4.20	**3.56**
		CV %	15.6	21.5	15.3	13.5	**16.5**

Trash Area

			Cotton 1	Cotton 2	Cotton 3	Cotton 4	Average
Average of Instruments (Grubbs)			0.303	0.111	0.232	0.287	
Reference Values for Evaluation			0.303	0.111	0.232	0.287	
Number Of Instruments			~~102~~	~~102~~	~~102~~	~~102~~	**102**
Inter-Instrument Variation	based on 30 tests	SD	0.081	0.031	0.077	0.078	**0.067**
		CV %	26.6	28.2	32.9	27.1	**28.7**
	based on 6 tests	SD	~~0.089~~	~~0.036~~	~~0.078~~	0.082	**0.072**
		CV %	29.3	34.5	33.7	28.7	**31.5**
	based on single tests	SD	0.107	0.043	0.081	0.093	**0.081**
		CV %	35.4	39.2	35.0	32.3	**35.5**
Typical within-instrument Variation (Median)	between different days with each 6 tests	SD	0.039	0.018	0.032	0.026	**0.029**
		CV %	12.9	16.0	13.8	9.2	**13.0**
	between single tests on one day	SD	0.047	0.024	0.035	0.035	**0.035**
		CV %	15.6	21.6	14.9	12.1	**16.1**
	between all tests on different days	SD	0.066	0.032	0.050	0.048	**0.049**
		CV %	21.9	28.7	21.7	16.8	**22.3**

3 Year Review of Overall CSITC RT Trash Results

RT	Average Count	Count SD	Count CV
2011-1	16.1	7.45	46.1
2011-2	15.1	7.02	46.5
2011-3	18.6	9.51	51.2
2011-4	14.3	7.58	52.9
Avg.	**16.0**	**7.89**	**49.2**
2012-1	17.2	8.89	51.8
2012-2	15.6	7.82	50.2
2012-3	17.8	8.21	46.2
2012-4	17.2	8.83	51.3
Avg.	**16.9**	**8.44**	**49.9**
2013-1	18.4	9.14	49.7
2013-2	17.5	7.68	43.8
2013-3	17.4	8.51	48.8
2013-4	22.0	7.94	36.1
Avg.	**18.6**	**8.32**	**44.6**

RT	Average Area	Area SD	Area CV
2011-1	0.193	0.055	28.5
2011-2	0.131	0.039	29.8
2011-3	0.165	0.054	32.7
2011-4	0.144	0.048	33.4
Avg.	**0.158**	**0.049**	**31.1**
2012-1	0.178	0.060	33.8
2012-2	0.138	0.044	31.8
2012-3	0.154	0.049	31.9
2012-4	0.189	0.061	32.2
Avg.	**0.165**	**0.054**	**32.4**
2013-1	0.180	0.068	37.7
2013-2	0.169	0.054	31.9
2013-3	0.168	0.058	34.6
2013-4	0.233	0.067	28.7
Avg.	**0.186**	**0.062**	**33.2**

Comparison of Instrument Models – 2013 CSITC RT Data

Instrument	Average Count	Count SD	Count CV
ART	11.3	6.05	53.7
HVI 1000	24.2	4.63	19.1
HVI 900	15.5	6.34	40.9
Spectrum	12.8	6.81	53.1

Instrument	Average Area	Area SD	Area CV
ART	0.152	0.060	39.5
HVI 1000	0.205	0.040	19.5
HVI 900	0.196	0.060	30.6
Spectrum	0.140	0.060	42.9

USDA Trash Tolerances

- Extreme range of trash measurements requires a floating tolerance
  - Area Tol. = Area * 0.235 + 0.031
  - Count Tol. = Count * 0.22 + 3.2
  - Overall USDA Trash Reproducibility for 2010 Crop
    - Area: 87%
    - Count: 92%

3 Year Review of Overall CSITC RT Trash Results

RT	Average Count	Count SD	USDA Tolerance Count
2011-1	16.1	7.45	6.75
2011-2	15.1	7.02	6.52
2011-3	18.6	9.51	7.29
2011-4	14.3	7.58	6.35
Avg.	**16.0**	**7.89**	**6.73**
2012-1	17.2	8.89	6.98
2012-2	15.6	7.82	6.63
2012-3	17.8	8.21	7.11
2012-4	17.2	8.83	6.99
Avg.	**16.9**	**8.44**	**6.92**
2013-1	18.4	9.14	7.25
2013-2	17.5	7.68	7.06
2013-3	17.4	8.51	7.04
2013-4	22.0	7.94	8.04
Avg.	**18.6**	**8.32**	**7.30**

RT	Average Area	Area SD	USDA Tolerance Area
2011-1	0.193	0.055	0.076
2011-2	0.131	0.039	0.062
2011-3	0.165	0.054	0.070
2011-4	0.144	0.048	0.065
Avg.	**0.158**	**0.049**	**0.068**
2012-1	0.178	0.060	0.073
2012-2	0.138	0.044	0.064
2012-3	0.154	0.049	0.067
2012-4	0.189	0.061	0.076
Avg.	**0.165**	**0.054**	**0.070**
2013-1	0.180	0.068	0.073
2013-2	0.169	0.054	0.071
2013-3	0.168	0.058	0.070
2013-4	0.233	0.067	0.086
Avg.	**0.186**	**0.062**	**0.075**

Comparison of Instrument Models – 2013 CSITC RT Data

Instrument	Average Count	Count SD	USDA Tolerance Count
ART	11.3	6.05	5.7
HVI 1000	24.2	4.63	8.5
HVI 900	15.5	6.34	6.6
Spectrum	12.8	6.81	6.0

Instrument	Average Area	Area SD	USDA Tolerance Area
ART	0.152	0.060	0.067
HVI 1000	0.205	0.040	0.079
HVI 900	0.196	0.060	0.077
Spectrum	0.140	0.060	0.064

Report on Cotton Trash Measurements

- Cotton Trash Standards adopted a Universal Cotton Standards at the June 2013 Universal Cotton Standards Conference
- Serve as the official reference standard for the cotton trash measurements of percent area and particle count